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THE IMPACT OF *U.S. NEWS &*
WORLD REPORT COLLEGE RANKINGS
ON ADMISSIONS OUTCOMES AND
PRICING POLICIES AT
SELECTIVE PRIVATE INSTITUTIONS

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The Impact of *U.S News & World Report* College
Rankings On Admission Outcomes and Pricing
Decisions at Selective Private Institutions
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ABSTRACT

Despite the widespread popularity of the *U.S. News & World Report* College rankings there has been no empirical analysis of the impact of these rankings on applications, admissions, and enrollment decisions, as well as on institutions' pricing policies. Our analyses indicate that a less favorable rank leads an institution to accept a greater percentage of its applicants, a smaller percentage of its admitted applicants matriculate, and the resulting entering class is of lower quality, as measured by its average SAT scores. While tuition levels are not responsive to less favorable rankings, institutions offer less visible price discounts in the form of slightly lower levels of expected self-help (loans and employment opportunities) and significantly more generous levels of grant aid. These decreases in net tuition are an attempt to attract additional students from their declining applicant pool.

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I. Introduction

Each fall the *U.S. News & World Report* (henceforth *USNWR*) publishes an issue that ranks the colleges and universities throughout the country. Many higher education administrators abhor this form of detailed numerical ordering of the institutions. Stanford University has gone so far as to have the data underlying their ranking audited by outside consultants, and the Association of American Universities is investigating the possibility of constructing its own ranking scheme in response to the popularity of the *USNWR* ranking (imitation being the highest form of flattery). At the same time, many institutions use their standing in the rankings as a selling point in their admissions brochures. Ehrenberg (forthcoming, chapter 4) outlines actions taken by Cornell University to improve its relative position in the rankings, that had no effect on the institution's underlying academic quality. He also illustrates how minor changes in the methodology used by *USNWR* can result in substantial changes in the rank ordering of the top-ranked national universities.

The widespread popularity of the rankings among students and families, as evidenced by the sales of the *USNWR* issue that contains the rankings and of their expanded special college ranking supplementary publication, as well as the increasing angst and attention that these rankings cause higher education administrators, warrant an analysis of the impact of these rankings on the higher education admissions processes. Machung (1998) chronicles the efforts sometimes taken by institutions to ensure or improve their position in the rankings. She also points out that a recent study by the Art and Science Group, a market research firm, found that two-thirds of parents of high-achieving, college-bound seniors felt the *USNWR* rankings to be "very helpful" in evaluating a college's quality. Hansmann (1998) also provides anecdotal

evidence that Yale's achieving the top position in the *USNWR* ranking of law schools resulted in a precipitous increase in the yield at the Yale Law School, the following year.

Despite these convincing examples and casual observations concerning the influence of the *USNWR* rankings of colleges and programs, there has been no thorough empirical investigation into the impact of these rankings on potential students' or academic institutions' behavior. Our paper fills this void by examining the effects of changes in *USNWR* rankings on the admissions outcomes and pricing policies of a set of institutions that are at the very top of the undergraduate rankings. In particular, we investigate the impact of changes in highly ranked national universities' and liberal arts colleges' *USNWR* rankings on the fraction of their applicants that they admit (their admit rates), the fraction of their accepted applicants that enroll (their yield rates) and the average SAT scores of their resulting freshman classes. We also examine the impact of changes in these institutions' rankings on the tuition levels they charge, the self-help levels they include in their financial aid packages, their aid-adjusted tuition levels (the average price actually paid by students on need-based financial aid), and their net tuition levels (the average price actually paid by all students).

II. Data

We focus on the set of national universities and liberal arts colleges that are ranked at the top of the rankings because these institutions and their rankings receive a disproportionate share of public attention. [1] The institutions in our sample include 16 of the top 25 national universities,

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[1] Our set of institutions is drawn from the Consortium on Financing Higher Education and includes: Amherst, Barnard, Brown, Bryn Mawr, Carleton, Columbia, Cornell, Dartmouth, Duke, Georgetown, Harvard, Johns Hopkins, MIT, Mount Holyoke, Northwestern, Oberlin, Pomona, Princeton, Smith, Stanford, Swarthmore, Trinity (CT), University of Chicago, University of Pennsylvania, University of Rochester, Washington University, Wellesley, Wesleyan, Williams, and Yale.

one university ranked between 26th and 50th and 13 of the top 25 national liberal arts colleges in the *USNWR* 1998 rankings. We restrict our attention to these institutions because we were able to obtain detailed information for them on the typical expected self-help and the financial aid-adjusted tuition levels for incoming freshmen. The availability of freshmen aid-adjusted prices permits us to more fully capture the impact of annual changes in the institutions' rankings on their pricing decisions than we could have done if we were forced to rely only on posted tuition levels.

The institutions in our sample are all members in the Consortium on Financing Higher Education (COFHE), which was established in 1974, before the beginning of the *USNWR* rankings in 1983.[2] Because all of the institutions in our sample are privately controlled, no inferences about the impact of changes in rank on admissions outcomes and pricing policies in public higher education institutions should be drawn from the results that follow.

We limit our sample years to the admissions outcomes and pricing policies for the entering classes of the 1988/89 to 1998/99 academic years, and to the prior year's fall *USNWR* rankings (the fall of 1987 to the fall of 1997). The first year of our sample is the first year that *USNWR* reported rankings for at least the top 25 liberal arts colleges and the top 25 national universities. Prior to 1987, *USNWR* reported only the top 10 or so ranked institutions in each category. The fall 1997 ranking is the final ranking used because it is hypothesized to influence the admissions' outcomes and pricing behavior for the 1998/99 academic year, the last year for which we had admissions and pricing information, at the time we wrote the paper. The resulting sample consists of 30 institutions across 11 years, for a panel of 330 observations. For some

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[2] Oberlin is the exception. Oberlin joined COFHE in 1988. All other institutions in our sample joined COFHE before USNWR began ranking colleges and universities

institution-years, the level of self-help or net tuition was not reported and those observations were dropped from the statistical analyses that used these variables.

USNWR determines an institution's rank among national universities and liberal arts colleges by taking a weighted average of the institution's scores on 7 broad categories of academic input and outcome measures. In its 1997 rankings, the categories and their weights were academic reputation (25 percent), retention rate (20 percent), faculty resources (20 percent), student selectivity (15 percent), financial resources (10 percent), alumni giving (5 percent), and graduation rate performance (5 percent). These 7 categories were further divided and 16 different variables were used to capture their dimensions. These 16 variables were: academic reputation, as measured by a survey of college presidents; the fraction of freshman applicants that were admitted (the admit rate): the fraction of accepted applicants that enrolled (the yield rate); the percentage of incoming freshman in the top 10 percent of their high school class; the average SAT or ACT scores or entering freshmen; average faculty compensation; the percentage of faculty with a Ph.D. or the highest degree possible in the field; the percentage of faculty who were full-time; the student/faculty ratio; the percentage of classes with 1 to 19 students; the percentage of classes with 50 or more students; the 6 year graduation rate; the freshman retention rate; average education expenditures per student; the alumni giving rate; and the institution's graduation rate performance relative to its predicted graduation rate measure.

Periodically, *USNWR* alters the methodology it uses to determine the rankings. So changes in an institution's rank do not necessarily indicate true changes in the underlying "quality" of the institution. In fact, some institutions have changed their positions in the ordering by as much as 18 places in a single year. For example, Bryn Mawr dropped from 5th position in 1989, to 23rd position in 1990. The hypotheses we are testing here is thus whether a change in an

institution's *USNWR* ranking, which is not necessarily equal to a change in the "true" academic quality of the institution, influences its admissions outcomes and its pricing behavior.

III. Empirical Results

Our methodological approach is to statistically relate the admissions outcomes and pricing variables described above for an institution in an academic year to its lagged (previous year's) *USNWR* ranking. Some institutions in our sample did not receive a specific numerical rank in some years because *USNWR* only reported the numerical ranks of the top 25 institutions in each category from 1987 to 1994. After 1994 they listed the top 50 national universities and top 40 national liberal arts colleges. For those institution-years for which an institution dropped out of the top 25 and its numerical rank was not reported, we assigned the institution a rank of 25. We also included in the model a dichotomous variable that was set equal to one for these institution-years and zero otherwise. It is straightforward to show that the coefficient on this variable indicates whether an institution that fell below a rank of 25 in those years experienced admissions or pricing outcomes that were significantly different from those of the 25th ranked institution.

We include average endowment per student at an institution among the explanatory variables in order to control for differences across institutions and over time in the ability to fund operations from revenue sources other than tuition. Institutional dichotomous variables are also included to capture time-invariant institution specific reputation and policy effects. Finally, year dichotomous variables are included to control for changes in the potential applicant pool and pricing environment that are consistent across this set of institutions.

Table 1 presents the results of our analyses of the impact of *USNWR* rank on admissions outcomes. In the first column, the admit rate (the number of students admitted/the number of

applicants) is specified to be linearly related to the institution's lagged *USNWR* rank, the dichotomous variable for the institution's lagged rank being greater than 25 and not specifically reported, average endowment per student, and institution and year effects. An increase in rank of one (an increase in rank reflects a less favorable position in the ordering; for example, moving from being ranked 2nd to 3rd) is associated with a positive and statistically significant increase in the institution's admit rate of 0.399. In other words, a change in rank, from say 4th to 5th, coincides with an increase in an institution's admit rate of almost one half of a percentage point. An institution whose rank is increasing must admit a greater percentage of its shrinking applicant pool in order to fill its incoming class, thus becoming less selective in its admissions. Conversely, an institution whose rank improves (becomes lower) can accept a smaller percentage of its applicants and increase its selectivity.

As column 2 indicates, an increase in rank not only decreases the selectivity of an institution, but lowers its yield (number of matriculants/number of admitted students), as well. A less favorable rank results in a smaller percentage of an institution's admitted applicants accepting positions in the entering class. This provides an additional reason why institutions that are losing ground in the rankings must admit a larger percentage of their applicants, while institutions that improving in the rankings can accept a smaller percentage of their applicants. While the impact on yield is statistically significant, the magnitude of the effect of a change in rank on yield is rather small. It takes an improvement in rank of 6 places to increase an institution's yield by 1 percentage point.[3]

An increase in average endowment per student also increases an institution's yield. In particular, a $10,000 increase in endowment per student increases an institution's yield by 0.56

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[3] We also estimated models in which the admit rate and yield rate were specified as log-odds ratios. The results were very similar and are not presented here.

percentage points. As will be discussed in the following section, an increase in endowment leads to pricing policies that lower the financial aid adjusted cost of attendance, thus increasing yield.

The net effect of an increase in rank on admit rates and yields is a decline in the average SAT score of the institution's incoming freshmen class.[4] The largest reductions in SAT scores are felt at the top of the rankings, with the impact declining further down the ordering of institutions. Thus the increased selectivity and yield that accompany an improvement in rank leads to a modest increase in the quality of the institution's incoming freshmen class, as measured by its average SAT scores.[5]

Table 2 presents our estimates of the impact of changes in an institution's *USNWR* rank on its pricing policies and on the tuition revenue it actually nets per student. All outcome variables in this table are specified in logarithmic form, so that the estimated coefficients for each explanatory variable represent the approximate percentage changes in the outcome associated with a one-unit change in the explanatory variable.

The first column presents estimates of the impact of rank and endowment per student on tuition. An increase in rank has no statistically significant impact on tuition. Similarly, an increase in endowment has no significant impact on tuition. "Sticker prices" appear not to be influenced by changes in the overall rank and wealth of an institution, conditional on institution and year-specific effects. This may be because gross tuition levels act, in part, as a signal of academic quality (Breneman (1994), p. 32), so that an institution does not want to reveal its declining position by lowering its published price.

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[4] The pre-1996/97 average composite SAT scores have been recentered to correct for the "recentering" of SAT scores that took place in that year.

[5] We experimented with including the square of rank in each of the regressions reported in tables 1 and 2. However, it proved to be statistically significant and improved the fit of the model only for the SAT score equation.

As column 2 indicates, however, an increase in rank is associated with a decrease in the typical expected freshmen self-help contribution from students. Institutions that experience a declining position (increasing rank) in the *USNWR* ordering appear to lower their self-help levels in an attempt to attract additional students, although this result is only significantly different from zero at the 10 percent level.

Consistent with the impact of rank on self-help, an increase in rank significantly lowers average financial-aid-adjusted tuition. An increase in rank (less favorable ranking) of 10 places leads to a reduction in aid adjusted tuition of approximately 4 percent. Because an increase in rank was shown in column 1 not to significantly reduce tuition levels, this reduction in aid-adjusted tuition implies that a less favorable ranking prompts institutions to provide more generous financial aid.[6] Likewise, an improvement in rank raises aid-adjusted tuition, as higher ranked institutions do not have to offer deep discounts to attract matriculants.

An increase in endowment per student also is associated with lower aid-adjusted tuition. This implies that institutions pass on at least some of their increases in wealth to their students in the form of more generous financial aid packages. A $100,000 increase in endowment per student reduces aid-adjusted tuition by approximately 4 percent.

Finally, an increase in rank leads to a decrease in net tuition (average aid-adjusted tuition across all students, both aided and non-aided). The decrease in net tuition is smaller than the decrease in aid-adjusted tuition. This result is consistent with the statistically insignificant effect of rank on tuition and the significant decrease in aid-adjusted tuition found in columns 1 and 3, respectively.

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[6] Aid-adjusted tuition is defined as tuition minus average grant aid per student, for those students on aid. It does not include self-help and merit aid. Although merit aid is becoming increasingly popular, it still constituted only 2.5 percent of all grant aid awarded in 1998/99 at the COFHE

Conclusion

Our analyses suggest that an increase in a selective private institution's *USNWR* rank (a less favorable ranking) leads the institution to accept a greater percentage of its applicants (an increase its admit rate), that a smaller percentage of its admitted pool of applicants matriculates (a decrease in its yield), and that its resulting entering class is of lower quality, as measured by average SAT scores. In addition, we find that institutions' tuition levels are not responsive to less favorable rankings. This may be because lower tuition relative to one's competitors may be perceived of as an additional signal of lower quality. As a result, institutions that have declined in the ratings offer less visible price discounts in the form of lower levels of expected self-help and more generous levels of grant aid, in an attempt to attract additional students from their declining applicant pool.

Cornell University, the home institution of one of us, provides a case study and test of the predictive power of our results. Cornell jumped in rank from 14th in the fall of 1997 (the last year used in our study) to 6th in the fall of 1998. Our estimates imply that this 8 place improvement in rank should have led to approximately a 3 percentage point reduction in the institution's admit rate, a one percentage point increase in its yield, and approximately an 8 point increase in its entering freshmen's average SAT scores. While data on these outcomes for the freshmen class entering in the fall of 1999 have not yet been publicly released by Cornell, a senior administrator confirmed for us that the reduction in the university's admit rate and the increases in its yield and average freshmen SAT scores were at least as large as our predictions. Moreover, completed freshman applications to the university rose by over 10 percentage points.

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institutions, and was granted to less than 2 percent of the total COFHE enrollment. Its exclusion from the aid-adjusted tuition levels should not significantly influence the results.

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A change in rank does have a significant influence on admissions outcomes and institutional pricing decisions for liberal arts colleges and national universities that are at the very top of the *USNWR* ranking lists. These in turn, through the methodology that *USNWR* uses, will have an impact on the institutions' future rank.[7] The growing popularity and influence of these rankings may also lead the institutions to try to influence them. Institutions may attempt to improve their position in the rankings by lobbying *USNWR* to change the methodology in a way that might favor an institution or group of institutions, by "correcting" their data in a way that leads to an improvement in their ranking, or by devoting resources to activities related to improving their rank that do not directly enhance educational quality. An example of the latter might be to increase the size of their development offices in order to increase their alumni giving rates, even if the marginal return to the university in terms of dollars raised from doing so doesn't exceed the cost of the additional staff.

The factor that receives the largest weight in the *USNWR* rankings is the survey of higher education administrators. Hence an improvement (or decline) in an institution's rank may lead to future movements in its rank in the same direction because administrators are increasingly aware of how other institutions fare in the rankings. The heightened awareness, and perhaps even animosity, among higher education administrators concerning their institutions' relative positions in the *USNWR* rankings appears to be warranted, as changes in rank have a significant influence on the applications and enrollment decisions of students and the pricing behavior of the institutions.

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[7] This mechanical relationship may lead to an endogeneity problem in our analyses, if current rank is correlated with future rank, which in turn is determined in part by current admission outcomes. Our inability to specify adequate exogenous variables for an institution's rank prevent us from conducting formal statistical tests of whether rank should be treated as endogenous in our models. However, our use of lagged rank and of institutions specific effects is intended to minimize this problem.

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Dependent Variable

	Admit Rate	Yield	Average SAT
Constant	19.543***	44.083***	1402.628***
	(4.121)	(1.988)	(11.848)
Lagged US News Rank	0.399***	-0.171***	-2.777***
	(0.098)	(0.047)	(0.773)
Lagged US News Rank Squared	-------	-------	0.086***
			(0.025)
Dummy of Lagged Rank > 25	0.473	1.073	-3.009
	(1.527)	(0.737)	(4.357)
Average Endowment/student	-0.013	0.056***	0.045
(thousands 98/99 $)	(0.015)	(0.007)	(0.041)
Institutional Dummy Variables	Yes	Yes	Yes
Year Dummy Variables	Yes	Yes	Yes
Adjusted R-square	0.93	0.97	0.96
Number of Institutions	30	30	30
Number of Institution-Years	330	330	330

Notes:
 (* ,**, ***) statistically significantly different from zero at 10% (5%, 1%) level.
Average endowment is 3 year moving average of lagged endowment levels.

Table 2 US News and World Report Ranking and Pricing
Academic Years 1988/89-1998/99

Dependent Variable (in log form)

	Tuition	Self-Help	Aid Adjusted Tuition	Net Tuition
Constant	10.102***	8.577***	9.461***	9.915***
	(0.012)	(0.080)	(0.069)	(0.036)
Lagged US News Rank:	-0.0001	-0.004*	-0.004**	-0.003***
	(0.0003)	(0.002)	(0.002)	(0.001)
Dummy of Lagged Rank > 25	0.0020	-0.031	-0.013	-0.022*
	(0.0044)	(0.028)	(0.026)	(0.013)
Average Endowment/student	-0.00001	0.0000	-0.0004*	-0.0001
(thousands 98/99 $)	(0.00004)	(0.0003)	(0.0002)	(0.0001)
Institutional Dummy Variables	Yes	Yes	Yes	Yes
Year Dummy Variables	Yes	Yes	Yes	Yes
Adjusted R-square	0.98	0.78	0.61	0.85
Number of Institutions	30	30	30	30
Number of Institution-Years	330	325	330	326

Notes:
 (*,**, ***) statistically significantly different from zero at 10% (5%, 1%) level.
  Average endowment is 3 year moving average of lagged endowment levels.